

# Release Notes

Revision: 21

## R&S®TSMW Universal Radio Network Analyzer

### Software R&S®TSMW-K1 Version V1.4.4.0

These Release Notes describe the following models and options of the R&S®Universal Radio Network Analyzer:

- R&S®Universal Radio Network Analyzer, order no. 1503.3001.02/03
- R&S®TSMW-K1 Software Option, order no. 1503.3960.02

**NOTES FOR R&S®TSMW USERS CAN BE FOUND  
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# 1 Revision History

Date	Rel. Note rev.	Changes
28. July, 2016	21.0	<b>Software R&amp;S®TSMW-K1 Version V1.4.4.0</b> Bug fix release
26. April, 2016	20.0	<b>Firmware V2.05</b> Bug fix release
20. January, 2016	19.0	<b>Firmware V2.04</b> Bug fix release <b>Software R&amp;S®TSMW-K1 Version V1.4.3.0</b> Bug fix release
31. March, 2015	18.0	<b>Firmware V2.02</b> Bug fix release
18. September, 2014	17.0	<b>Firmware V2.01</b> Device detection Display system time on web page Update and bug fix release
18. March, 2014	16.0	<b>Firmware V2.00</b> Disable resource distribution by host <ul style="list-style-type: none"> <li>• Equal resource distribution applied</li> </ul> Access added to report temperatures Update and bug fix release
27. January, 2014	15.0	<b>Firmware V1.15</b> Automatic Gain Control (AGC) for Digital IQ streaming measurement Update and bug fix release
26. June, 2013	14.0	<b>Firmware V1.14</b> Bug fix release
03. December, 2012	13.0	<b>Firmware V1.13</b> Bug fix release
22. June, 2012	12.0	<b>Firmware V1.12</b> Bug fix release
21. February, 2012	11.0	<b>Firmware V1.11</b> Cycle Pulse Recording PPS In/Out over Pulse BNCs Digital I/Q Extension <ul style="list-style-type: none"> <li>• Support for channel multiplexing</li> <li>• Reference level added</li> </ul> <b>Update and bug fix release</b>
29. July, 2011	10.0	Changed description in firmware update section

15. July, 2011	9.0	<b>Firmware V1.10</b> Enhanced Digital I/Q output to support up to 8 channels <b>Software R&amp;S®TSMW-K1 Version V1.4.2.0</b> Digital I/Q interface status and information messages support. <b>Digital I/Q interface output support of the 2<sup>nd</sup> Frontend.</b>
18. Mai 2011	8.0	<b>Firmware V1.09</b> Support option K71 and K72 Update and bug fix release <b>Software R&amp;S®TSMW-K1 Version V1.4.1.0</b> <b>No change</b>
08. April 2011	7.0	<b>Firmware V1.08</b> No change <b>Software R&amp;S®TSMW-K1 Version V1.4.1.0</b> Update and bug fix release
31. January 2011	6.0	<b>Firmware V1.08</b> Model 03 support Digital IQ streaming support Update and bug fix release <b>Software R&amp;S®TSMW-K1 version V1.4.0.0</b> <b>Update and bug fix release</b>
07. October 2010	5.0	<b>Firmware V1.07</b> Update and bug fix release <b>Software R&amp;S®TSMW-K1 Version V1.3.0.2</b> <b>No change</b>
20. August 2009	4.0	<b>Firmware V1.06</b> LTE support <b>Software R&amp;S®TSMW-K1 Version V1.3.0.2</b> <b>No change</b>
29. June 2009	3.0	<b>Firmware V1.05</b> Update and bug fix release <b>Software R&amp;S®TSMW-K1 Version V1.3.0.2</b> <b>Update and bug fix release</b>
31. October 2008	2.0	<b>Firmware V1.04</b> Update and bug fix release <b>Software R&amp;S®TSMW-K1 Version V1.2.0.0</b> Update and bug fix release
30. July 2008	1.0	<b>Firmware V1.03</b> Update of the initial Release <b>Software R&amp;S®TSMW-K1 Version V1.1.0.0</b> Update of the Initial Release

## 2 Installation Information

### 2.1 Firmware Update

The Web-Browser on the host PC is used to update the instrument firmware.

#### **NOTICE**

##### **Danger of instrument damage!**

Make sure that neither ROMES nor any other utility tool interfaces with the R&S®TSMW at the same time. Shut down any active utility before starting the browser!

#### 2.1.1 Requirements

- PC/Notebook with LAN interface
- PC/notebook and R&S®TSMW connected with a LAN cable
- Appropriate IP settings for the instrument and the LAN adapter of the host PC – refer to the R&S®TSMW user manual for details.
- R&S®TSMW powered up and power on sequence completed successfully – the green Process State LED on the front panel side of the R&S®TSMW needs to be on after switching on the instrument.
- Be sure that no other application is interfacing with the R&S®TSMW.
- TSMW firmware file (TSMW.tfw) temporary stored on the host PC. The firmware file could be downloaded from the internet under: <http://www.rohde-schwarz.com>. Select “DOWNLOAD” and search for R&S®TSMW within the category FIRMWARE.

#### 2.1.2 Instruction for FW Update via Browser

- Open the web browser on the host PC.
- Enter IP address (default IP address: 192.168.0.2) and load the TSMW web interface.  
-> The installed firmware version is indicated in the “System Configuration” section of the web interface
- Scroll down to the “Firmware Update” section
- Press the “Browse” button and select the TSMW firmware file (\*.fw)
- Press the “Install” button  
-> The new firmware file will be downloaded to the instrument - this can take up to a few minutes (a progress bar at the bottom of the web interface indicates the present state).
- After a while an amber dialog box comes up signaling that the download has been finished.
- Then the Web browser starts automatically to re-connect to the instrument.
- The successful completion is indicated with a green message box.

**NOTICE****Danger of instrument damage!**

Switching off the power supply or disconnecting the LAN cable during firmware upload may cause severe instrument damage!

## 2.2 Software Installation

### 2.2.1 Option Key Installation

Connect the LAN Interface of the R&S®TSMW with the host PC, switch on the instrument and insert the accompanying CD-ROM into the host PC drive.

1. After self-test has been finished on the R&S®TSMW, start the web-browser application on the host PC and enter the IP address of the instrument to access the web-interface. The instrument is shipped with the default the IP address 192.168.0.2

**Note:**

In cases where the IP address of the R&S®TSMW had been reconfigured manually according to local IP network setting requirements, please refer to the user manual how to query the current IP address.

2. The browser window will display the web-interface with all the instrument related system information.
3. Scroll down to the “Instrument Options” section and press the “Browse...” button. A file dialog comes up to select the option key xml file(s).
4. Browse to the root of the CD-ROM drive, select the “OptionKey\*Kxx.xml” file and press “Open”.  
(Any ordered software option is shipped as an xml-file with the appropriate Kxx string in the file name)

**Note:**

Alternatively, the option key code could be entered manually via the web-interface as a column of figures in the corresponding entry field. The key code can be extracted from the accompanying “Software Option List” which is part of any ordinary option key shipment.

5. Press the “Install” button in the web-interface. The browser page starts refreshing automatically and the new option should now be listed in the “Instrument Options” section.
6. Repeat step 5 for every option key file located in the CD-ROM root directory as R&S®TSMW software options may require the installation of several option keys.
7. The new software option(s) should now be supported from the instrument.

## 3 New Functions

The following table lists the new functions and indicates the version in which the new function was introduced:

Version	Function
	<b>Firmware</b>
V2.01	<ul style="list-style-type: none"> <li>• Device detection added.</li> <li>• Display system time on web page added.</li> </ul>
V2.00	<ul style="list-style-type: none"> <li>• Disable resource distribution by host. Equal resource distribution applied.</li> <li>• Access added to report temperatures.</li> </ul>
V1.15	<ul style="list-style-type: none"> <li>• Automatic Gain Control (AGC) for Digital I/Q streaming measurement</li> </ul>
V1.11	<ul style="list-style-type: none"> <li>• Cycle Pulse Recording</li> <li>• PPS In/Out over Pulse BNCs</li> <li>• Digital I/Q Extension <ul style="list-style-type: none"> <li>• Support for channel multiplexing</li> <li>• Reference level added</li> </ul> </li> </ul>
V1.10	<ul style="list-style-type: none"> <li>• Enhanced Digital I/Q output to support up to 8 multiplexed channels</li> </ul>
V1.09	<ul style="list-style-type: none"> <li>• Support option K71 and K72</li> </ul>
V1.08	<ul style="list-style-type: none"> <li>• Support of digital I/Q streaming output</li> </ul>
V1.07	<ul style="list-style-type: none"> <li>• Support of Auto-Attenuation for periodic measurements</li> </ul>
V1.06	<ul style="list-style-type: none"> <li>• LTE support for ROMES</li> </ul>
V1.05	<ul style="list-style-type: none"> <li>• Automatically scheduled periodic measurements</li> <li>• Enhanced measurement scheduler including receiver resource management</li> <li>• Enhanced trigger support</li> </ul>
V1.04	<ul style="list-style-type: none"> <li>• GPS support for ROMES</li> <li>• IQ streaming support</li> <li>• Automatic gain control for scanner measurements</li> <li>• TSMW IQ Interface API changed to stdcall</li> </ul>
V1.03	<ul style="list-style-type: none"> <li>• WiMAX measurement support</li> <li>• Automatic GPS synchronization</li> <li>• Enhanced IQ measurement features</li> <li>• Enhanced TSMW measurement scheduler</li> </ul>
	<b>R&amp;S®TSMW-K1 Software</b>
V1.4.2.0	<ul style="list-style-type: none"> <li>• Access to Digital I/Q interface status and information messages.</li> <li>• Extended Digital I/Q interface output support to the 2<sup>nd</sup> Frontend.</li> <li>• Updated TSMW IQ Interface Demo Application (Digital I/Q: status, FrontEnd2 support).</li> </ul>
V1.4.1.0	<ul style="list-style-type: none"> <li>• Enhanced GPS support (NMEA sentences transmitted over LAN)</li> <li>• Updated TSMW IQ Interface Demo Application (GPS server, high resolution sample rate)</li> </ul>

Version	Function
V1.4.0.0	<ul style="list-style-type: none"> <li>• Support of digital I/Q streaming output</li> <li>• Updated TSMW IQ Interface Demo Application</li> </ul>
V1.3.0.2	<ul style="list-style-type: none"> <li>• Enhanced GPS support (NMEA and UBLOX protocol)</li> <li>• Support of automatically scheduled periodic measurements</li> <li>• Support of receiver resource management</li> <li>• Support of triggered measurements</li> </ul>
V1.1.0.0	<ul style="list-style-type: none"> <li>• GPS support included</li> <li>• Single and double precision output data type support</li> <li>• Direct access to TSMW trigger port via trigger function</li> <li>• Access to TSMW reference oscillator DAC value</li> <li>• Updated TSMW IQ Interface Demo Application</li> <li>• Updated TSMW Filter Design Demo Application</li> </ul>

## 4 Modified Functions

The following table lists the modified functions and indicates the version in which the modification was carried out:

### Firmware

Version	Function
V1.02	Initial Release

### Software (R&S®TSMW-K1)

Version	Function
V1.0.1.0	Initial Release – FW 01.02 mandatory

## 5 Eliminated Problems

The following table lists the eliminated problems and indicates the version in which the problem was observed for the first time:

### Firmware

Version	Function
V2.05	<ul style="list-style-type: none"> <li>• Fix: very high number of periodic measurements could lead to memory consumption problems. No measurements were possible afterwards. Reboot of TSMW was required.</li> </ul>
V2.04	<ul style="list-style-type: none"> <li>• Fix: balance scheduling of different demodulation measurements.</li> <li>• Fix: issue with Scanner Stopping Sending Data to PC.</li> </ul>



Version	Function
V2.02	<ul style="list-style-type: none"> <li>Fix: gaps during periodic measurements when a slow PC is used for measurements.</li> </ul>
V2.01	<ul style="list-style-type: none"> <li>Fix: HTTP-POST xml option installation bug in TSMW web server, when users kept on getting message: "Old or inconsistent HTML page. Please reload TSMW web page and retry."</li> <li>Fix: crash in TSMW web server when installing malformed xml option file.</li> <li>Fix: always send the first message to the GPS-chipset twice, as some chipsets don't respond to the first message.</li> </ul>
V2.00	<ul style="list-style-type: none"> <li>Fix: fixed sporadic suspension of periodic measurements.</li> </ul>
V1.15	<ul style="list-style-type: none"> <li>Fix: corrected overflow checking (rounding up / MSbits truncating).</li> <li>Fix: added temperature correction in Dig I/Q data path.</li> <li>Fix: temperature correction for streaming measurements.</li> <li><del>Fix: fixed sporadic suspension of periodic measurements.</del> Fixed in Version 2.00.</li> </ul>
V1.14	<ul style="list-style-type: none"> <li>Fix: periodic measurements were hanging under some conditions.</li> <li>Fix: canceled measurements were not always cleaned up, leading to a crash of the TSMW.</li> <li>Fix: access to real time clock could lead to invalid date/time information.</li> <li>Fix: improved performance using jumbo frames with Intel® i82579LM/LC network chips.</li> </ul>
V1.13	<ul style="list-style-type: none"> <li>Fix: start time calculation for the scheduling of periodic MIMO measurements were incorrect in certain conditions and blocking the TSMW.</li> <li>Fix: measurements were not always cleaned after closing a resource, leading to a crash of the TSMW.</li> <li>Fix: changed priority of the GPS messages to reduce internal delays and message bursts under heavy load conditions.</li> <li>Fix: internal real time clock could report a wrong date/time under some conditions.</li> </ul>
V1.12	<ul style="list-style-type: none"> <li>Fix: start time calculation for the scheduling of periodic measurements were incorrect in certain conditions.</li> <li>Fix: deadlock: measurements on one frontend could be stopped until a new measurement request was sent by the host.</li> <li>Fix: measurement resource allocated to K1 API was not set for both frontends by default.</li> <li>Fix: start time values received from K1 API were ignored.</li> <li>Fix: erratic behavior of the GPS task with ROMES fixed.</li> </ul>
V1.11	<ul style="list-style-type: none"> <li>Fix: using ViCom, it was possible that a measurement was blocking a frontend until restart of TSMW.</li> <li>Fix: Resource usage calculation in case of MIMO measurements was not correct for Frontend 2.</li> <li>Fix: It was possible that messages in TSMW were not processed in correct order.</li> <li>Fix: GPS messages transmitted by TSMW were corrupted in certain conditions.</li> </ul>
V1.09	<ul style="list-style-type: none"> <li>Fix: Improvement of scheduler. Measurements are done more evenly.</li> <li>Fix: Wrong MAC Addresses used in R&amp;S®TSMW. With new FW MAC Addresses are corrected during boot automatically.</li> <li>Fix: Wrong filters were used during measurements sometimes.</li> </ul>
V1.08	<ul style="list-style-type: none"> <li>Fix: memory leak during streaming measurements</li> <li>Fix: using ViCom, all measurements were sometimes erroneously stopped when a measurement was stopped by user.</li> </ul>

Version	Function
V1.07	<ul style="list-style-type: none"> <li>Fix: Streaming functionality Depending on the bit format, streaming will not work properly after 64 or 128 blocks. This is fixed now. 8 and 12 bit format -&gt; After 128 blocks, streaming was not working fine. 16 and 20 bit format -&gt; After 64 blocks, streaming was not working fine.</li> <li>Fix bug concerning scheduling of measurements which leads to the situation that some measurements were not started.</li> <li>Measurement Scheduler redesign – speeding up multi-tech measurements</li> <li>Fix: IP configuration troubles for addresses different to 192.168.x.x</li> <li>Fix: Measurement data of the two frontends was sometimes mixed or not sent to Host-PC. This is fixed.</li> <li>Fix problem concerning loss of network connection between R&amp;S®TSMW and host PC. During measurement, network connection to R&amp;S®TSMW was lost sometimes.</li> <li>Fixes in base system to increase stability.</li> <li>Fix: It occurred that some measurements were not running any more. This is fixed now.</li> <li>Fix: After a while R&amp;S®TSMW delivered no measurement results at all, due to a problem in message system. This is fixed now.</li> </ul>
V1.06	<ul style="list-style-type: none"> <li>Runtime issues concerning long-term measurements in ROMES</li> </ul>
V1.04	<ul style="list-style-type: none"> <li>Frequency shift works now for all 4 subchannels of both frontends</li> <li>Crash when using invalid resampling filter fixed</li> <li>MIMO measurement bug fix</li> </ul>
V1.03	TSMW Modes “Connected” and “Measuring” are indicated correctly via front panel LEDs
V1.02	Initial Release

### Software (R&S®TSMW-K1)

Version	Function
V1.4.4.0	<ul style="list-style-type: none"> <li>Fix: Values "StartTimeIQ", "StartTimeHost" and "Offset" were not set in the output structure TSMWIQResult.</li> </ul>
V1.4.3.0	<ul style="list-style-type: none"> <li>Fix: Initialize properly FSTR_TSMW_MEAS_SETUP structures to avoid random crash due to memcpy from null pointer</li> <li>Fix: Second UBX command sent to R&amp;S®TSMW did not respond</li> <li>Fix: DigIQOnOff initialization was missing in cpp sample code.</li> <li>Fix: TSMWIQSetup_c was modifying the input parameter pFilterParam for no reason.</li> <li>Fix: In TSMWSetDateTime_c, use UTC time instead of localized time to set RTC time, as specified in TSMW.</li> </ul>
V1.4.1.0	<ul style="list-style-type: none"> <li>Fix: UBX command sent to R&amp;S®TSMW</li> <li>Fix: crash of K1 software while opening large streaming files</li> </ul>
V1.4.0.0	<ul style="list-style-type: none"> <li>Fix: support for small screens in R&amp;S®TSMW IQ Interface Demo</li> <li>Fix: force unload of IQ Interface library when closing R&amp;S®TSMW IQ Interface Demo</li> </ul>
V1.2.0.0	<ul style="list-style-type: none"> <li>Frequency shift works now for all 4 subchannels of both frontends</li> <li>Crash when pressing “Release Interface” fixed</li> <li>MATLAB function “TSMWGetFIRParam” bug fix (function returned wrong parameters for small sampling factors)</li> </ul>

V1.0.1.1	<ul style="list-style-type: none"> <li>• GPS is automatically enabled. GPS data can be acquired via USB port. FW 1.02 mandatory.</li> <li>• Startup problem of Matlab IQ demo (Java Memory Overflow)</li> </ul>
V1.0.1.0	Initial Release – FW 01.02 mandatory

## 6 Known Problems

The following table lists the known problems and indicates the version in which the problem was observed for the first time:

### Firmware

Version	Function
All	<ul style="list-style-type: none"> <li>• The last message of a group of messages sent by the GPS module internally to the TSMW is effectively processed at the beginning of the following group of messages.</li> </ul> <p>Workaround:</p> <ul style="list-style-type: none"> <li>○ With ROMES: the last message of a group of messages is UBX-NAV-SVINFO; this message does not contain time critical information. Furthermore, with ROMES, the delay between group of messages is, by default, set to 200 ms.</li> <li>○ With ViCOM / TSMW-K1, the following messages are the last periodic messages of a group of messages, and they can be used as padding message: <ul style="list-style-type: none"> <li>▪ In UBX only mode: UBX-NAV-SBAS</li> <li>▪ In NMEA only mode: <ul style="list-style-type: none"> <li>• Standard: GPGBS</li> <li>• Standard + proprietary: PUBX04</li> </ul> </li> <li>▪ In UBX + NMEA mode: NMEA messages are transmitted after UBX messages, see NMEA only mode above.</li> </ul> </li> </ul>
V1.12	<ul style="list-style-type: none"> <li>• Start time calculation may be wrong for periodic measurements using both frontends (e.g. MIMO), leading to a possible delay of a couple seconds.</li> </ul>
V1.11	<ul style="list-style-type: none"> <li>• Erratic behavior of the GPS task with ROMES. Fixed in version v1.12.</li> </ul>
V1.07	<ul style="list-style-type: none"> <li>• It can occur that measurements are not running at the right measurement rate.</li> <li>• ViCom: It can occur that all measurements are stopped when only a few were stopped by user. They are started again when stopped measurements by user are started again. Fixed in version V1.08.</li> </ul>

### Software (R&S®TSMW-K1)

Version	Function
-	-

## 7 Modifications to the Documentation

The new and modified functions mentioned in these release notes are already documented. Except the below mentioned last minute changes you can find the description including remote commands in the online help or in the manual. The manual can be downloaded from the internet under: <http://www.rohde-schwarz.com>. Select "DOWNLOAD" and search for R&S®TSMW within the category MANUAL.

### 7.1 Last minute changes to the operating manual

TSMW WiMAX measurements require PPS synchronization of the instrument via the internal GPS receiver.

Therefore connect the GPS antenna to the receiver and guarantee good GPS coverage to run stable WiMAX measurements.

## 8 Notes for R&S®TSMW users

### 8.1 Incompatibilities

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**⚠ WARNING****Change in C++ API of R&S®TSMW IQ Interface Version 1.2.0.0**

Parameter changes in the structures used by the C++ API makes a recompilation of existing C++ programs necessary.

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**⚠ WARNING****Incompatibility of R&S®TSMW Filter Design Tool**

Resampling filters design with a previous R&S®TSMW-K1 TSMW Filter Design Tool (1.1.0.0) is incompatible to newer version. Using resampling filters design with a previous filter design tool will result in an error message or in incorrect results.

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**⚠ WARNING****Incompatibility of Firmware version**

Firmware version **01.03** is not compatible to the **previous versions** (1.0.1.0 / 1.0.1.1) of the R&S®TSMW-K1 software (Gigabit Digital IQ Interface). This means that both the R&S®TSMW firmware has to be updated and the corresponding R&S®TSMW-K1 Software Version 1.1.0.0 has to be installed. Using a mixed firmware and R&S®TSMW-K1 configuration will likely result in a software crash.

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Installing R&S®TSMW-K1 software is not necessary if the R&S®TSMW is used together with R&S®ROMES software.

## 8.2 Software Options

In order to enable new firmware options the installation of the appropriate option key(s) on the instrument and on the host PC side is mandatory.



### Only additional software option has to be enabled

All new devices from factory are pre-configured with appropriate optionkeys installed on the instrument.

Re-orders of instrument options require proper installation of delivered optionkeys.

**Table 1: Software Options**

Option	K Number	Ordering Number	Instrument Optionkeys	ROMES Software Option (Host PC)
Digital I/Q SW Option	TSMW-K1	1503.3960.02	TSMW-K1	Not applicable
TD-SCDMA SCAN Option	TSMW-K20	1515.7320.02	TSMW-K20 TSMW-K120	ROMES4T1W
GSM/WCDMA SCAN Option	TSMW-K21	1503.4514.02	TSMW-K21 TSMW-K121 TSMW-K221	ROMES4T1W
CDMA/EV-DO SCAN Option	TSMW-K22	1503.4520.02	TSMW-K22 TSMW-K122 TSMW-K222	ROMES4T1W
TETRA SCAN Option	TSMW-K26	1510.8792.02	TSMW-K26 TSMW-K126	ROMES4T1W
TEDS SCAN Option	TSMW-K26Q	1510.8792.03	TSMW-K26 TSMW-K226	ROMES4T1W
TETRA DMO SCAN Option	TSMW-K26D	1510.8792.04	TSMW-K26 TSMW-K326	ROMES4T1W
RF POWER SCAN Option	TSMW-K27	1503.4537.02	TSMW-K27 TSMW-K127	ROMES4T1W
WiMAX SCAN Option	TSMW-K28	1503.4543.02	TSMW-K28 TSMW-K128	ROMES4T1W
LTE SCAN Option	TSMW-K29	1503.4550.02	TSMW-K29 TSMW-K129	ROMES4T1W
LTE MIMO SCAN Option	TSMW-K30	1514.4085.02	TSMW-K30	Not applicable

## 8.3 Hardware Options

The following Hardware Options are available for TSMW:

Option	Designation	Ordering Number	Instrument Optionkeys	ROMES Software Option (Host PC)
Digital I/Q Interface	TSMW-B1	1514.4004.02	TSMW-K1 TSMW-K101	Not applicable

## 9 Appendix: Contacting our Hotline

Any questions or ideas concerning the instrument are welcome by our hotline:

### **Europe, Africa, Middle East**

Phone +49 89 4129 12345

[customersupport@rohde-schwarz.com](mailto:customersupport@rohde-schwarz.com)

### **North America**

Phone 1-888-TEST-RSA (1-888-837-8772)

[customer.support@rsa.rohde-schwarz.com](mailto:customer.support@rsa.rohde-schwarz.com)

### **Latin America**

Phone +1-410-910-7988

[customersupport.la@rohde-schwarz.com](mailto:customersupport.la@rohde-schwarz.com)

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